# Finding Angle Measures

Directions: Find the missing measure in each figure. Keep angle relationships in mind.

1. *vertical*

112° (x = 112)

.x°

2. *complement*

.x°

68°

90 − 68 = (22°)

3. *linear pair*

124° .x°

180 − 124 = (56°)

4.

180 − 43 = 137

y = 43°

x = 137°

.x°

.y°

z = 137°

.z° 43°

5.

180

.y° .x°

72°

.z°

180 − 72 = 108

= 90

y = 72°

z = 18°

x = 108°

90 − 72 = 18

5. ∠1 and ∠2 are vertical angles. If the measure of ∠2 is 105°, find the measure of ∠1.

∠1 = (105°)

6. ∠A and ∠B are complementary angles. If the measure of ∠A is 42°, find the measure of ∠B.

90 − 42 = (48)

7. ∠P and ∠Q are supplementary angles. If the measure of ∠Q is 64°, find the measure of ∠P.

180 − 64 = (116°)

8. ∠1 and ∠2 are a linear pair. If the measure of ∠1 is 113°, find the measure of ∠2.

180 − 113 = (67°)

Using Algebra to Solve for Missing Measures

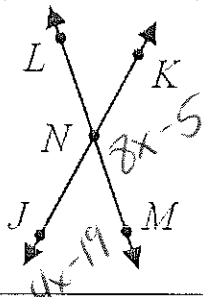**9.** If $m\angle PQT = 3x + 47$ and $m\angle SQR = 6x - 25$, find the measure of $\angle SQR$.

3x + 47

P   T

Q

S   6x − 25   R
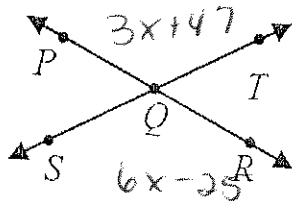
$3x + 47 = 6x - 25$

$3x = 72$

$x = 24$

$6(24) - 25$

(= 119°)

10. If $m\angle KNM = 8x - 5$ and $m\angle MNJ = 4x - 19$, find the measure of $\angle KNM$.

L   K

N   8x − 5

J   M

4x − 19

$8x - 5 + 4x - 19 = 180$

$12x - 24 = 180$

$12x = 204$

$x = 17$

$8(17) - 5$

$= 131°$

11. $\angle R$ and $\angle S$ are complementary angles. If the $m\angle R = 12x - 3$ and the $m\angle S = 7x - 2$, find $m\angle R$.

$12x - 3 + 7x - 2 = 90$ $12(5) - 3$

$19x - 5 = 90$ $= 57°$

$19x = 95$

$x = 5$

12. $\angle P$ and $\angle Q$ are supplementary angles. If the $m\angle P = 4x + 1$ and $m\angle Q = 9x - 3$, find $m\angle Q$.
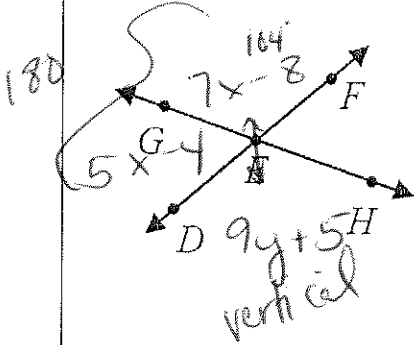
$4x + 1 + 9x - 3 = 180$ $9(14) - 3$

$13x - 2 = 180$ $= 123°$

$13x = 182$

$x = 14$

13. If $m\angle DEG = 5x - 4$, $m\angle GEF = 7x - 8$, $m\angle DEH = 9y + 5$, find the values of x and y.

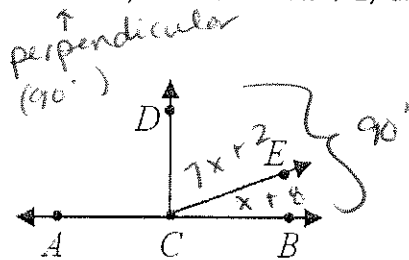

$5x - 4 + 7x - 8 = 180$ $9y + 5 = 104$

$12x - 12 = 180$ $9y = 99$

$12x = 192$

$x = 16$ $y = 11$

$7(16) - 8 = 104$

14. If $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$, $m\angle DCE = 7x + 2$, and $m\angle ECB = x + 8$, find the measure of $\angle DCE$.

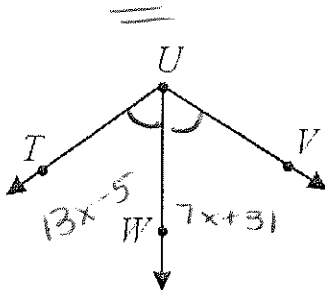perpendicular $(90°)$

$7x + 2 + x + 8 = 90$

$8x + 10 = 90$

$8x = 80$

$x = 10$

$7(10) + 2 = \boxed{72°}$

15. If $\overrightarrow{UW}$ bisects $\angle TUV$, $m\angle TUW = 13x - 5$, and $m\angle WUV = 7x + 31$, find the value of x.
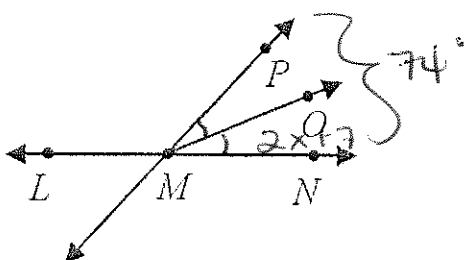

$13x - 5 = 7x + 31$

$6x = 36$

$x = 6$

16. If $\overrightarrow{MO}$ bisects $\angle PMN$, $m\angle PMN = 74°$, and $m\angle OMN = 2x + 7$, find the value of x.

$74/2 = 37$

$2x + 7 = 37$

$2x = 30$

$x = 15$